



PROCESS
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PRACTICES

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Machinery

PIP RESP003S
Specification for High Power Vertical Submerged
Motor Centrifugal Pumps for Water Service

PURPOSE AND USE OF PROCESS INDUSTRY PRACTICES

In an effort to minimize the cost of process industry facilities, this Practice has been prepared from the technical requirements in the existing standards of major industrial users, contractors, or standards organizations. By harmonizing these technical requirements into a single set of Practices, administrative, application, and engineering costs to both the purchaser and the manufacturer should be reduced. While this Practice is expected to incorporate the majority of requirements of most users, individual applications may involve requirements that will be appended to and take precedence over this Practice. Determinations concerning fitness for purpose and particular matters or application of the Practice to particular project or engineering situations should not be made solely on information contained in these materials. The use of trade names from time to time should not be viewed as an expression of preference but rather recognized as normal usage in the trade. Other brands having the same specifications are equally correct and may be substituted for those named. All Practices or guidelines are intended to be consistent with applicable laws and regulations including OSHA requirements. To the extent these Practices or guidelines should conflict with OSHA or other applicable laws or regulations, such laws or regulations must be followed. Consult an appropriate professional before applying or acting on any material contained in or suggested by the Practice.

This Practice is subject to revision at any time.

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Table of Contents

1. Scope	2
2. References	2
2.1 Process Industry Practices	2
2.2 Industry Codes and Standards	2
3. Definitions	4
4. Requirements	6
4.1 Basic Design	6
4.2 Motor Design	18
4.3 Accessories	19
4.4 Inspection and Testing	20
4.5 Preparation for Shipment	21
4.6 Documentation	22
Table 1. Recommended Spare Parts	23
Table 2. Minimum Uninterrupted Operation for Pumps and Auxiliaries	23
Table 3. Bearing Selection	24
Appendix A – Selection of Pump Materials of Construction	25
Table A. Application of Material Classes to Water Services	25
Appendix B – Pump Material Classes Designations	27
Table B – Material Classes	27

Data Sheets

- RESP003S-D – Vertical Submerged Motor Centrifugal Pumps for Water Service (U.S. Customary Units)
- RESP003S-DM – Vertical Submerged Motor Centrifugal Pumps for Water Service (SI Units)

1. Scope

This Practice provides requirements for design and manufacture of vertical submerged motor centrifugal pumps of 150 kW (200 HP) or greater used for water services.

Comment: Water services include condensate, cooling water, demineralized water, utility water, produced water, treated water, etc.

Comment: General water services include condensate, cooling water, demineralized water, utility water, produced water, treated water, etc.

This Practice describes manufacturing and performance requirements for vertical submerged motor centrifugal pumps and their accessories.

This Practice covers pumps with service conditions within the following limits:

- | | |
|--------------------------------|--------------------|
| a. Maximum discharge pressure | 35 Barg (500 psig) |
| b. Minimum pumping temperature | 0°C (32°F) |
| c. Maximum pumping temperature | 150°C (300°F) |
| d. Maximum rotational speed | 3,600 rpm |

Comment: For services within the capabilities of ANSI/ASME pumps, use *PIP RESP73S*.

2. References

Applicable parts of the following Practices and industry codes and standards shall be considered an integral part of this Practice. The edition in effect on the date of contract award shall be used, except as otherwise noted. Short titles are used herein where appropriate.

2.1 Process Industry Practices (PIP)

- PIP REDP003 - *Documentation Requirements for Centrifugal Pumps for Water Service*
- PIP REEE003 - *Guidelines for General Purpose Non-Lubricated Flexible Couplings*
- PIP REEP006 - *Pump Selection Guidelines*
- PIP REIE686A - *Machinery Installation and Installation Design Annex*
- PIP RESP002 - *Design of ASME B73.1 and General Purpose Pump Baseplates*

2.2 Industry Codes and Standards

- American Gear Manufacturers Association (AGMA)
 - AGMA 9002 - *Bores and Keyways for Flexible Couplings (Inch Series)*
- American National Standards Institute (ANSI)
 - ANSI B11.19 - *Performance Criteria for Safe Guarding*
 - ANSI S2.19 - *Mechanical Vibration - Balance Quality Requirement of Rigid Rotors, Part 1: Determination of Permissible Residual Unbalance*